

SUBJECT INDEX

A

- Acetate
 - nutritional research on lacto-
bacilli and, 3-4
- N*-Acetylhexosamines, 46
- N*-Acetylneuraminic acid, 45
- Actin-severing proteins
 - intracellular calcium and,
369-70
- Acylglyceride synthesis, 430
- Adenosine
 - lipolysis and, 426-27
- Adenosine diphosphate
 - glutathione synthesis and, 288
 - mitochondrial energy ex-
penditure and, 242
- Adenosine triphosphatase
 - calmodulin activation and,
363
 - hypertension and, 331-32
- Adenosine triphosphate
 - free fatty acids and, 254
 - glutathione synthesis and,
288
 - intracellular calcium and,
362-66
 - lysosomal hydrolysis and, 40-
41
 - mitochondrial synthesis of,
230-31, 242-44
 - inhomogeneity and, 234
 - nutritional deficiencies and,
236-37
 - in oxidative phosphorylation,
231-32
- Adenylate cyclase
 - hormone-sensitive lipase and,
425-26
- Adenylyl cyclase
 - intracellular calcium and,
362-63
- Adipocytes
 - gender differences, 421-22
 - precursors of, 423-25
 - see also Body fat distribution
- Adipose tissue
 - body fat distribution physiolo-
gy, 417-36
 - caloric deprivation and, 435-
36
 - see also Body fat distribution
- Adrenal gland
 - polyols effect on rat's, 172-73
- Adrenal medullary activity
 - caloric deprivation and, 435-
36
- Adrenoreceptors
 - lipolysis and, 425-26
 - site-related differences in,
428-29
- Alanine
 - effects on following injury,
457-58
- Albinism
 - tyrosine and, 54
- Albumin
 - free fatty acid circulation and,
255-61
- Alcohols
 - sugar alcohols as bulk
sweeteners, 161-77
 - see also Polyols
- Aldolase, 175
- Aldosterone
 - polyols and levels of, 173
- Alkaline phosphatase
 - zinc levels and, 110
- Allogenic tissue transplantation,
408-10
- Amino acids
 - fuel utilization following in-
jury and, 454-56
 - glomerular filtration rate and,
96
 - lactobacilli requirements, 13
 - lysosomal hydrolysis and, 40-
41
 - selenium and sulfur substitu-
tion, 128-29
 - transport of
glutathione and, 290
- Angiotensin II
 - hypertension and, 332
- Animal models
 - in development of therapeutic
strategies for lysosomal
disorders, 406-11
- Annexins
 - intracellular calcium and,
367-68
- Apolipoproteins
 - Apo genes, 140-55
 - Apo(a) gene, 155
 - ApoA-I/C-III/A-IV gene
cluster, 146-48
 - ApoA-II gene, 148-49
 - ApoB gene, 149-51
 - ApoC-II gene, 152-53
 - ApoD gene, 155
 - ApoE gene, 153-55
 - chromosomal localization
of, 142
 - evolutionary considerations
of, 142-44
 - restriction fragment length
polymorphisms in,
145-55
 - coronary heart disease and,
319-21
 - familial type III hyperlipidem-
ia and, 326-27
- Arachidonic acid
 - renal disease and, 90
- Ascorbic acid
 - mechanisms of uptake of,
192-93
- Atrophic gastritis, 271-75
 - diagnosis of, 273-74
 - physiologic consequences of,
274-75
 - prevalence of, 272
 - type A and type B differenti-
ated, 271-72
 - see also Gastritis

B

- Bacteria
 - atrophic gastritis and, 274
 - gastritis and, 272
 - lactic acid bacteria, 1-14
 - microbiologic assays in nutri-
tional research, 5-8
 - selenium metabolism and,
127-36
 - vitamin B₁₂ absorption pro-
cess and, 281
- Bioavailability
 - of trace elements in infant
foods, 114-19
- Biotin, 8-9
 - lysosomal membrane transport
of, 55
 - mechanisms of uptake of,
190-94
 - in mitochondrial disorders,
236-37
- Bitot's spots, 64
- Bladder disorders
 - xylitol and, 176-77
- Blood pressure
 - coronary heart disease and,
328-35
 - Utah studies of, 330-
35
 - see also Hypertension
- Blood urea nitrogen
 - renal disease and, 88-89
- Body fat distribution
 - adipocyte precursors in cul-
ture and, 423-25
 - body shape measurements
and, 418-20
 - caloric deprivation and, 435-
36

- endocrine modulation of
lipolysis and, 429-30
fat cell size regulation and,
425-33
gender differences in, 421-22
lipolysis and, 429
in humans, 417-36
lipolysis and, 425-26
lipoprotein lipase and, 431-32
morbidity findings and, 420-21
regulation of fat cell size and,
425-33
regulation of regional fat cell
number and, 423-25
site-related differences in, 422
neuroendocrine receptors
and, 428-29
- Body shape
measurement of, 418-20
- Body temperature
effects of injury and sepsis
on, 446-47
see also Energy expenditure
- Bone marrow
vitamin A effects on, 76
- Bone marrow transplantation,
408-9
- Bordetella pertussis*
calmodulin activation and,
363
- Bromsulphthalein
FABP_{PM} and, 264
uptake rates of, 257
- Bronchitis
vitamin A status and, 68
- Burns
effects of on fuel utilization,
445-68
see also Energy expenditure
- C
- Calcineurin, 361-62
- Calcium
dietary fiber role in absorp-
tion of, 275-76
hydrochloric acid in absorp-
tion of, 276-77
hypochlorhydria effects on,
275-77
intracellular, 347-70
see also Intracellular cal-
cium
lactase deficiency and, 490
polyol levels and effects on
metabolism, 170-71
renal disease and, 90-91
Calmodulin, 356-65
binding proteins and, 358-62
- Caloric restriction
thyroid hormones and, 211-13
- Calpactin I, 367-68
- Calpains, 366-67
- Calsequestrin, 369-70
- Campylobacter pylori*
in gastritis, 272
- Cancer
lactitol and, 177
xylitol and, 176-77
- Carbohydrates
lysosomal hydrolysis and, 44-47
metabolism of following in-
jury, 459-63
- Carnitine
deficiencies of, 236-37
- Catabolism
following injury, 449-54
- Catecholamines
adipocytes and, 425-26, 428
effects of injury and sepsis
on, 447
- Cathepsin, D, 41
- Cathepsin A, 41
- Cell(s)
albumin in, 255-61
disposition of water-soluble
vitamins in, 193-94
FABP_{PM} and, 263-65
free fatty acid uptake by,
253-67
albumin dissociation and,
255-61
mitochondrial isozyme of
glutamate-oxaloac-
etate-transaminase and,
264-65
injury to
fuel utilization following,
445-66
and mitochondrial function,
243-44
lysosomal membrane trans-
port within, 39-56
membrane transport within,
261-63
mitochondrial function and
nutrient supply within,
229-45
tissue-specific mitochondrial
distribution, 233-34
uptake of free fatty acids,
260-65
see also Mitochondria
- Central nervous system
copper metabolism diseases
and, 52
hypothalamic-pituitary axis,
201-22
neuroendocrine mediators of
metabolic response, 465-66
- Cereals
trace element nutrition in,
113-14
- in weaning, 378
- Ceroid lipofuscinosis, 398, 404-5
- Child development
body fat distribution and,
421-35
iodine deficiency disorders
and, 25-27
thyroid hormone effects on,
220-21
vitamin A deficiency effects
on, 64-66
- Cholesterol
coronary heart disease and,
315-19
familial hypercholesterolemia
and, 322-24
familial type III hyperli-
pidemia and, 326-27
high-density lipoproteins and,
141-42, 318-19
murine lysosomal cholesterol
storage disorder, 405-6
receptor-mediated endocytosis
and, 47-49
renal disease and, 90
serum cholesterol levels and
genetic susceptibility,
316-17
transport of, 140-41
- Cholesterol acetyltransferase,
405-6
receptor-mediated endocytosis
and, 48-49
- Chymotrypsin
in infants, 116
- Cigarette smoking
coronary heart disease and,
309, 313
- Cirrhosis
copper metabolism and, 53-54
- Clostridium butylicum*, 9
- Clostridium kluyveri*
selenium and, 129
- Clostridium thermoaceticum*
formate hydrogenases and
selenium, 132
- Cobalamin
atrophic gastritis and, 274
see Vitamin(s), vitamin B₁₂
- Codex Alimentarius Commission
of WHO/FAO, 381
- Codons
selenocysteine incorporation
into proteins and, 134-35
- Collagenase, 41
- Colon
metabolism of colonic flora,
485-86
- Congenital lactase deficiency,
486
see also Lactase

- Conjunctival xerosis
 vitamin A deficiency effects
 on, 64-65
- Copper
 deficiency in infants, 120-21
 dietary effects on bioavailability in infants, 119
 in human milk, 113
 infant nutrition and, 109-21
 status assessment of, 111
 lysosomal membrane transport and, 52-54
- Corneal xerosis
 vitamin A deficiency effects
 on, 64
- Coronary heart disease, 304-35
 adipose tissue and, 417-43
 apolipoproteins and, 319-21
 body fat distribution and, 419-36
 cigarette smoking and, 309, 313
 elevated fibrinogen levels and, 328
 environmental versus genetic effects on, 307-8
 familial combined hyperlipidemia and, 324-26
 familial dyslipidemic hypertension and, 333-35
 familial hypercholesterolemia and, 322-24
 familial type III hyperlipidemia and, 326-27
 family history as an independent risk factor in, 308-15
 family history as predisposing factor in, 306-8
 HDL cholesterol level and, 318-19
 homocystinuria and, 327-28
 hyperapobetalipoproteinemia and, 319-21
 hypertension and, 328-35
 inherited susceptibility to, 313-15
 lipoproteins and, 319-22
 low and high density lipoproteins and, 333-35
 prospective studies of, 309-13
 risk factor calculations in, 313
 serum cholesterol levels and, 315-17
 see also Apolipoproteins;
 Cholesterol; Hypertension
- Cortisol
 injury and sepsis effects on, 447
- Corynebacterium diphtheriae*, 8
- Creatinine
 renal disease and, 88-89
- Cretinism
 endemic, 23-24
- Cyclic nucleotide phosphodiesterases
 intracellular calcium and, 362-63
- Cyclic adenosine monophosphate
 intracellular calcium levels and, 348
- Cysteamine, 5
- Cysteine
 selenium and sulfur substitution of, 128-29
- Cystine
 lysosomal hydrolysis and transport of, 41-42
- Cystinosis, 42, 396
- Cytidine monophosphate
 sialic acid and, 45
- Cytidine triphosphate
 sialic acid and, 45
- Cytochrome *c* oxidase
 in fetal liver, 239
- Cytokines
 injury and sepsis effects on, 447
- Cytoplasm
 extrusion of calcium from, 355-56
 intracellular calcium and, 351-59
- Cytoskeletal proteins
 calmodulin activation and, 363-66
- D
- Dehydrogenase disorders, 236
- Delayed-type hypersensitivity, 78
- Dental caries
 polyol sweeteners and, 167-70
- Desulfovibrio baculatus*, 132
- Diarrhea
 vitamin A deficiency effects on, 66
- Diet
 deficiencies of nutrient supply and treatment of, 234-36
 effects on trace element bioavailability in infants, 117-19
 fiber in and calcium absorption, 275-76
 glutathione metabolism effects of, 293-95
 hyperapobetalipoproteinemia and, 320
 of infants, 111-13
 lactase expression and, 481
 in lactose malabsorption management, 491-93
- optimal mitochondrial functioning and, 238-42
 in overnutrition and weaning, 381-84
 serum cholesterol levels and, 316-17
 of weanlings, 379-82
 see also Nutrition
- Digestion
 of proteins by infants, 116
- Diiodotyrosine
 tyrosine transport and, 43-44
- DNA
 selenocysteine incorporation into proteins and, 133-36
 sequencing
 actin-severing proteins and, 369
- DNA sequencing
 in apolipoprotein gene variation studies, 145-46
- Dopamine
 oxidation into dopaquinone, 54
 renal function and, 95-96
- Dopamine β -hydroxylase, 52
- Dopaquinone
 albinism and synthesis of, 54
- E
- E. coli*
 calmodulin production in, 356-65
 selenocysteine incorporation into proteins and, 134-35
- Elastase, 41
- Encephalopathy, 235
- Endemic cretinism, 23-24
- Endocrine system
 lipolysis regulation and, 425-28
 thyroid gland hormone actions, 201-22
- Endocytosis
 cholesterol and receptor-mediated, 47-49
 iron and receptor-mediated, 49-51
- Energy
 free fatty acid uptake and, 255-60
 weaning practices and, 379-80
- Energy balance
 thyroid hormone metabolism and, 213-16
- Energy expenditure
 acute-phase proteins and, 456
 following injury
 free fatty acids and, 463-65
 neuroendocrine mediators and, 465-66

- hypercatabolism following injury, 449-54
 hypermetabolism and, 448-49
 injury and sepsis effects on, 445-66
 ebb phase, 446-47
 in muscle and protein breakdown following injury, 454-56
 nitrogen balance and, 451-52
 protein turnover and, 458-59
 thyroid hormone metabolism and, 219-20
- Enzymes
 carbohydrate metabolism and, 44-47
 copper-containing, 52-54
 enzyme replacement therapy, 407-8
 lactase, 475-94
 mitochondrial expression of, 231-33
 selenium-dependent, 129-33
 tyrosine transport and, 43-44
- Epilepsy
 myoclonus, 235
- Epinephrine
 adipocytes and, 426
 site-related differences in, 428-29
- Epithelial integrity
 vitamin A and, 75-76
- Epithelial transport
 of water-soluble vitamins, 187-95
- European Economic Community
 weaning food guidelines, 381-82
- Exercise
 energetic efficiency and, 242-43
- Eye disease
 epidemiology of, 68-69
 vitamin A deficiency effects on, 64-71
- F
- FABP_{PM}
 future perspectives on, 266-67
 isolation of, 263-65
 mitochondrial isozyme of
 glutamate-oxaloacetate-transaminase and, 264-65
- Fabry's disease, 409
- Familial combined hyperlipidemia, 324-26
- Familial dyslipidemic hypertension, 333-35
- Familial HDL deficiency, 327
- Familial hypercholesterolemia, 322-24
- Familial type III hyperlipidemia, 326-27
- Family history
 coronary heart disease and, 306-15
 hypertension and, 329-31
 lipoproteins and coronary heart disease and, 319-21
- Fat
 see Body fat distribution
- Fetal development
 iodine deficiency disorders and, 24-25
- Fibrinogen levels
 coronary heart disease and, 328
- Fluorescent probes
 calcium sensitive, 349-51
- Folate
 mechanisms of uptake, 190-93
- Folic acid, 9-10
 hypochlorhydria effects on, 278-79
- Fragmin, 369-70
- Free fatty acids, 253-67
 body fat distribution and, 431-33
 bromsulphthalein uptake rates and, 257
 caloric deprivation and, 435-36
 cellular uptake of, 255-67
 albumin dissociation, 255-61
 driving forces for, 265-66
- FABP_{PM} and, 263-65
 membrane transport and, 261-63
 mitochondrial isozyme of
 glutamate-oxaloacetate-transaminase and, 264-65
 morbidity and, 420-21
 oleate uptake and, 257-60
 plasma concentration of, 254
 following injury, 463-65
 see also Body fat distribution
- Fructokinase, 175
- Fuel utilization
 See Energy expenditure
- G
- Galactosuria, 482
- G_{M1}-Gangliosidosis, 399-400
- G_{M2}-Gangliosidosis, 400
- Gastritis, 271-82
 atrophic, 271-75
 diagnosis of, 273-74
 prevalence of, 272
- bacterial overgrowth of proximal small intestine in, 274
 gastric emptying changes in, 274
 intrinsic factor selection and, 274
 pH change of altered proximal small intestine in, 275
 type A and type B differentiated, 271-72
- Gaucher's disease, 399, 410
- Gelsolin, 369-70
- Gender differences
 in body fat distribution, 421-22
 body fat distribution, 429
- Gene therapy
 for inherited metabolic disorders, 410
- Genetics
 of apolipoprotein genes, 140-55
 of coronary heart disease, 304-35
 defects
 albinism, 54
 of lysosomal function in animals, 396-411
 Menke's disease, 53
 murine lysosomal cholesterol storage disorder, 405-6
 environmental effects and, 307-8
 of familial hypercholesterolemia, 322-24
 of hypertension, 329-30
 inherited susceptibility for coronary heart disease, 313-15
 methodologies of human population genetics, 305
 Utah study of coronary heart disease and, 306-7
 see also Apolipoprotein genes
- Globoid cells leukodystrophy, 400-401
- Glomerular filtration rate
 in progression of renal disease, 100-102
 renal disease and, 88-89
 renal function and, 92-96
- Glomerulosclerosis, 91
- Glucagon
 injury and sepsis effects on, 447
- Glucconeogenesis
 following injury, 459-60
- Glucose
 effect on following injury, 460-61

- Glucuronic acid
lysosomes and, 55
- Glutamine
effects on following injury, 457-58
uptake following injury, 454-56
- γ -Glutamylcysteine synthetase deficiency, 291
- γ -Glutamyl transpeptidase deficiency, 293
- Glutaric aciduria (type II), 236
- Glutathione
catabolism of, 290
flavin-adenine-dinucleotide group and, 293-94
function of, 289-90
glutathione peroxidase, 294-95
deficiency of, 292
glutathione reductase deficiency, 292-94
glutathione-S-transferase deficiency, 292-93
glutathione synthetase deficiency, 292
glyoxylase reaction and, 290
hereditary defects and metabolism of, 291-93
reduction, 288-89
substrate effects on synthesis of, 295-96
synthesis, 288
- Glycoaldehyde
xytilol and oxalate effects, 174-76
- Glycogenosis, 398, 401-2
- Glycogen storage diseases, 401-2
- Glycoproteinosis, 398, 402-3
- Glycosaminoglycan metabolism, 403-4
- Goiter, 22-23
- Growth
iodine deficiency disorders and, 25-27
role of thyroid hormones in, 220-21
- Growth hormone
lipolysis and, 427-28
- H**
- Heart disease
See Coronary heart disease
- Hemophilus parainfluenzae*, 8
- Hepatic function
copper metabolism and, 53-54
free fatty acids and, 420-21
and fuel utilization following injury, 454-56
- Heredity
glutathione metabolism, 291-93
- Heritability
definition of, 305
environmental versus genetic effects on, 307-8
of hypertension, 328-31
of serum cholesterol levels, 316
of serum triglyceride levels, 317-18
- Herpes simplex, 70
- Hexosaminidase
in enzyme replacement therapy, 407
- Hexuronic acids, 55
- High density lipoproteins
transport of, 141-42
see also Lipoproteins
- Homocystinuria, 327-28
- Hormones
adipocytes and, 425-26
lysosomal hydrolysis and, 40-47
thyroid releasing hormone, 201-22
- Hormone-sensitive lipase
adenylate cyclase effects on, 425-26
- Humoral immunity
vitamin A deficiency and, 77-78
- Hydrochloric acid
role in calcium absorption, 276-77
- Hydrolysis
of disaccharide polyols, 165-66
- Hyperapobetalipoproteinemia, 151-52
coronary heart disease and, 319-21
- Hypercatabolism
following injury, 449-54
- Hyperglycemia
following injury, 459
injury and sepsis effects on, 447
- Hyperlipidemia, 90
family history as an independent risk factor in, 308
- Hypermetabolism
following injury, 448-49
- Hyperphosphatemia
renal disease and, 90-91
- Hypertension
angiotensin II and, 332
familial dyslipidemic hypertension, 333-35
- family history as an independent risk factor in, 308
- family history and genetics in, 329-31
- heritability of, 328-31
- "hypothalamic arousal syndrome" and, 421
- low and high density lipoproteins and, 333-35
- "modulators" versus "non-modulators" in, 332
- and renal disease, 89-90
- salt intake and, 329-33
- stress and, 329-30
- Hyperthyroidism, 27-28
- Hypertriglyceridemia, 318
- Hypoalbuminemia
following injury, 456
- Hypochlorhydria, 271-82
calcium absorption and, 275-77
folic acid and, 278-79
iron absorption and, 277
nutrient metabolism effects on, 275-81
vitamin B₁₂ and, 280-81
vitamin B₆ and, 279
see also Gastritis
- Hypothalamus
body shape and, 421
hypothalamic-pituitary axis, 201-22
injury and sepsis effects on, 448
nutrition and, 205-7
in regulation of thyroid hormones, 202-5
- Hypoxanthine-guanine phosphoribosyltransferase deficiency, 410-11
- I**
- Iduronic acid
lysosomes and, 55
- Immunity
host resistance mechanisms and effects of vitamin A on, 75-79
renal disease and cellular immunity, 91
- Indian childhood cirrhosis
copper metabolism and, 53-54
- Infantile free sialic acid storage disease, 45
- Infants
dietary patterns in, 111-13, 379-83
formula composition for, 113, 379-81
lactase activity in, 479-80
lactase deficiency in, 485-90

- obesity and weaning practices
in, 382-83
trace element nutrition in,
109-21
bioavailability from infant
foods, 114-20
deficiencies of, 109-10,
120
intake assessment of, 111-
14
status assessment of, 110-
11
undernutrition effects of
weaning in, 384-91
weaning
food analysis, 113-14, 379-
83
health and, 377-91
timing of, 378-79
see also Weaning
- Infection
host resistance mechanisms
and vitamin A, 75-79
vitamin A status and, 67-71
vitamin deficiencies and pub-
lic health implications
and, 63-79
- Injury
acute-phase proteins and,
456
fuel utilization following,
445-66
see also Energy expenditure
- Insulin
adipocyte glucose metabolism
and, 430-31
free fatty acids and, 420-21
hormone-sensitive lipase and,
426
levels of following injury,
459
- Intermediate density lipoproteins
See Lipoproteins
- Intermyofibrillar mitochondria,
233
- Intestines
copper metabolism and, 53
in disaccharide polyol
metabolism, 167
uptake of water-soluble vita-
mins in mammal's, 191-
93
- Intracellular calcium, 347-70
alternative pathways for
mobilizing, 355
annexins and, 367-68
calmodulin and, 356-65
calpains and, 366-67
effector systems regulated by,
356-70
extrusion of Ca from cyto-
plasm, 355-56
measurement of, 348-51
regulation of Ca levels, 351-
56
release from intracellular Ca
stores, 352-55
voltage-sensitive calcium
channels, 351-52
- Intraglomerular hemodynamics
renal disease and, 90
- Intralymphocytic sodium con-
centration, 329
- Iodine
tyrosine transport and, 43-44
Iodine deficiency disorders, 21-
35
assessment of, 32-33
communication among agen-
cies in control of, 33-34
correction of, 29-32
demography of, 28
endemic cretinism and, 23-24
epidemiology of, 28
fetal development and, 24-25
goiter and, 22-23
hyperthyroidism and, 27-28
iodine-induced hyperthyroid-
ism, 27-28
iodized oil in treatment of,
30-31
iodized salt in treatment of,
29-30
in neonate, 25
prophylaxis of, 31-32
public health programs for
prevention and control
of, 32-35
see also Thyroid gland
- Iodized oil
in treatment of iodine de-
ficiency disorders, 30-31
- Iodized salt
in treatment of iodine de-
ficiency disorders, 29-30
- Iron
deficiency in infants, 109-11,
120-21
during weaning, 387-89
dietary effects on bioavailabil-
ity of in infants, 117-19
in human milk, 112
hypochlorhydria effects on,
277
infant nutrition and, 109-21
polyols and metabolism of,
171
receptor-mediated endocytosis
and, 49-51
weaning practices and, 379-81
- K
Kallikrein
hypertension and excretion of,
331-32
- Kearns-Sayre syndrome, 235
Keratomalacia, 64
- Kidneys
protein intake effects on renal
function, 92-96
protein intake and renal func-
tion, 94-96
uptake of water-soluble vita-
mins and, 191-93
see also Renal disease
Kluyveromyces lactis, 493
Krabbe's disease, 397-98, 400-
401, 408, 480
- L
Lactase
adaptation of, 480-81
decline of lactase expression,
481-82
description of, 478
in fetus and newborn, 479
intolerance, 484-86
malabsorption
diagnosis of, 490-91
management of, 491-94
malabsorption of lactose and,
482-84
Lactase deficiency, 479-84
congenital, 486
definition of, 494
irritable bowel and, 489
osteoporosis and, 490
primary lactase nonpersis-
tence, 486-87
recurrent abdominal pain, 489
secondary, 487-89
AIDS and, 489
cow's milk protein in-
tolerance and, 488
diarrheal disease and, 487-
88
inflammatory bowel disease
and, 488-89
parasitosis and, 488
Lactase persistence
definition of, 494
Lactic acid bacteria, 1-14
amino acid requirements of,
13
Lactic acidosis, 235
Lactitol, 161-77
Leydig cell tumors in rats
and, 177
see also Polyols
Lactobacillus arabinosus, 9
Lactobacillus bulgaricus, 5, 493
Lactobacillus delbrueckii, 3-4
Lactobacillus fermenti, 13
Lactobacillus lactis, 13
Lactobacillus casei, 5-8, 10-12
Lactoferrin
in human milk, 112

- Lactose, 475-94
 absorption physiology of, 477-78
 description of, 476-77
 malabsorption, 482-84
- Lactose intolerance
 definition of, 495
- Lactose malabsorption
 definition of, 495
- Lactosuria, 482
- Lead
 polyols and absorption of, 171
- Lecithin-cholesterol-acetyltransferase reaction, 141-42
- Lesch-Nyhan syndrome, 410
- Leucine aminopeptidase, 41
- Leuconostoc citrovorum*, 9
- Leukotrienes
 glutathione and synthesis of, 290
- Leydig cell tumors
 lactitol and, 177
- Linkage analysis
 in apolipoprotein gene variation studies, 145-46
- Linoleic acid
 renal disease and, 90
- Lipid myopathies
 carnitine deficiencies and, 237
- Lipids
 endogenous lipids
 transport of, 141
 exogenous lipids
 transport of, 140-41
 familial dyslipidemic
 hypertension and, 333-35
 renal disease and, 90
- Lipocortin II
 intracellular calcium and, 367-68
- Lipoic acid, 3-4
- Lipolysis
 age effects on, 430
 endocrine and paracrine regulators of, 425-28
 injury and sepsis effects on, 447
- Lipoproteins
 apolipoprotein genetics, 140-55
 coronary heart disease and, 319-21
 disorders, 322-28
 familial combined hyperlipidemia and, 324-26
 high density lipoproteins
 hypertension and, 333-35
 intermediate density lipoproteins
 receptor-mediated endocytosis and, 47-49
 lipoprotein(a), 321-22
 lipoprotein lipase, 431-33
 low density lipoproteins
 familial dyslipidemic
 hypertension and, 333-35
 receptor-mediated endocytosis and, 47-49
 transport of, 141
 transport of, 140-42
 see also Apolipoprotein genes
- Low density lipoproteins
 See Lipoproteins
- Lymphoid tissue
 host resistance mechanisms and vitamin A, 76-77
- Lysine transport, 42-43
- Lysosomal diseases, 396-411
- Lysosomal hydrolysis, 40-47
N-acetylhexosamines and, 46
 and amino acids, 40-44
 amino acids and, 40-41
 of carbohydrates, 44-47
 cystine transport and, 41-42
 lysine transport and, 42-43
 nucleosides and, 47
 receptor-mediated endocytosis and, 48-49
 sialic acid and, 45
 of sugars, 45-46
 tyrosine transport, 43-44
- Lysosomal membrane transport
 albinism and, 54
 in cellular nutrition, 39-56
 cholesterol and, 47-49
 copper and, 52-54
 iron and, 49-51
 sulfate and, 54-55
 vitamin B₁₂ and, 51-52
- M**
- Malnutrition
 weaning and, 384-91
- Maltitol, 161-77
 absorption and metabolism of, 165-67
 see also Polyols
- Maltotriitol, 161-77
 see also Polyols
- Mammals
 uptake of water-soluble vitamins in, 191-93
- Manganese
 deficiency in infants, 120-21
 dietary effects on bioavailability of in infants, 119
- Mannitol, 161-77
 absorption and metabolism of, 164-66
 dental caries and, 168
 see also Polyols
- Mannosidosis, 402-3
- Measles
 vitamin A status and, 69
- Melanin
 albinism and synthesis of, 54
- Membrane(s)
 lysosomal membrane transport, 39-56
- Membrane transport
 FABP_{PM} and, 263-65
 free fatty acids and, 261-63
 mitochondrial isozyme of
 glutamate-oxaloacetate-transaminase activity and, 264-65
- Menke's disease, 53
- β -Mercaptoethylamine, 5
- Metabolism
 of adipocyte glucose, 430-31
 apolipoprotein genes and, 140-55
 of carbohydrates
 following injury, 459-63
 catabolism and hypercatabolism following injury, 449-54
 of cellular thyroid hormones, 216-18
 of colonic flora, 485-86
 of copper, 52-54
 effects of infection and vitamin A status on, 67-71
 effects of minerals and polyols on, 170-72
 energy balance and, 213-16
 energy dynamics and, 242-43
 free fatty acids and, 420-21
 free fatty acid uptake and, 255-60
 glutathione, 289-93
 deficiencies of, 291-94
 effects of dietary constituents on, 293-95
 heredity and, 291-93
 hypermetabolism, 448-49
 inherited lysosomal disorders of, 397-411
 injury and sepsis effects on, 445-66
 see also Energy expenditure of intracellular calcium, 347-70
 of lipids, 140-42
 lysosomal hydrolysis and carbohydrate metabolism, 44-47
 neuroendocrine mediators of, 465-66
 nutrition-induced changes in, 218-21
 peripheral hormone metabolism of thyroid gland, 207-16
 of polyols, 164-67

- tyrosine transport and, 43-44
of vitamins, 193
xytilol and oxalate effects on, 174-76
- Metallothionein**
copper binding and, 52
selenium and, 128-29
zinc levels and, 110
- Methanobacterium formicicum*
formate hydrogenases and selenium and, 132
- Methanococcus thermoautotrophicum*
selenium and, 133
- Methanococcus vannielii*
formate hydrogenases and selenium and, 131-32
- Methanococcus voltae*, 132-33
- Methionine**
selenium and sulfur substitution, 128-29
- Microbiologic assays**
in vitamin research with bacteria, 5-8
- Microorganisms**
selenium metabolism and, 127-36
- Milk**
bioavailability of trace elements in infants and, 117-19
composition of human milk, 111-13
lactase deficiency and, 485-90
lactase function and, 478-87
lactase intolerance and, 484-86
lactose in, 476-77
weaning and, 379-81
- Mitochondria**
activity of mitochondrial isozyme of glutamate-oxaloacetate-transaminase in, 264-65
ATP production and, 230-31, 234
cytochrome *c* oxidase and, 239
disorders and nutrient therapy, 235-37
enzyme activities in, 231-33
intramyofibrillar, 233
modulation of by nutrients, 234-45
nutrient supply and deficiency effects, 235-37
developmental effects, 239-41
functioning, 229-46
physiologic effects, 241-43
organization and function of, 230-31
plasticity of, 230-34
skeletal muscle, 233-34, 241
subsarcolemmal, 233
tissue-specific distribution of, 233-34
vitamin effects on biogenesis of, 235
- Mitochondrial isozyme of glutamate-oxaloacetate-transaminase**, 264-65
future perspectives on, 266-67
- Mitochondrial myopathy**, 235
- Monodeiodination**, 211-13
- Monoiodotyrosine**
tyrosine transport and, 43-44
- Monosaccharide polyols**, 161-77
see also Polyols
- Mortality**
vitamin A deficiency effects on, 71-72
- Mucopolysaccharidoses**, 398, 403-4
- Multiple acyl CoA dehydrogenases**
nutrient treatment of, 236
- Multiple carboxylase deficiency**
nutrient therapy for, 237
- Murine lysosomal cholesterol storage disorder**, 405-6
- Muscles**
fuel utilization in following injury, 454-56
mitochondrial disorders and nutritional supply, 235-36
- Myoclonus epilepsy**, 235
- N**
- Neonate**
iodine deficiency disorders and, 25
- Neuroendocrine mediators**
in metabolism, 465-66
- Neuronal ceroid lipofuscinoses**, 398, 404-5
- Neurospora crassa*
selenium and, 128
- Niacin**
uptake mechanisms of, 190-94
- Nicotinamide adenine dinucleotide**
glutathione reduction and, 289
mitochondrial damage and, 245
respiration rates in newborn rats and, 240
- Nicotinamide adenine dinucleotide phosphate**
glutathione reduction and, 289
- Nicotinic acid**, 8-9
- Nicotinic acid hydroxylase**
selenium and, 130
- Niemann-Pick disease (type A)**, 398-99, 405-6
- Niemann-Pick disease (type C)**, 397-98, 406
- Nightblindness**
vitamin A deficiency effects, 64-66
- Nitrogen balance**
effects on following injury, 454-58
sepsis and, 451-52
- Norepinephrine**
adipocytes and, 426
site-related differences in, 428-29
- Norepinephrine**
caloric deprivation and, 435-36
- Norite eluate factor**, 9-10
- Nucleosides**
lysosomal hydrolysis and, 47
- 5'-Nucleotidase**
zinc levels and, 110
- Nutrition**
body fat distribution physiology and, 417-36
calcium absorption and hypochlorhydria, 275-77
carnitine deficiencies and, 237
cellular nutrition and lysosomal membrane transport, 39-56
cholesterol and receptor-mediated endocytosis, 47-49
deficiency effects on mitochondria, 235-37
in developing countries, 379
dietary fiber
hypochlorhydria and, 275-76
effects on injury and sepsis, 445-66
eye disease and, 64-71
folic acid
hypochlorhydria and, 278-79
free fatty acids and, 253-67
fuel utilization and, 448-64
glutathione and, 287-95
of human milk, 111-13
hypochlorhydria and, 271-82
hypothalamic-pituitary axis and, 203-5, 208-16
infant's trace element nutrition, 109-21
iodine deficiency disorders, 22-35

- iron and
 - hypochlorhydria, 277
 - receptor-mediated endocytosis and, 49-51
 - trace element bioavailability studies of infant foods, 114-19
 - lactic acid bacteria and nutrition research, 1-14
 - lactose in, 475-94
 - lysosomal membrane transport, 39-56
 - mitochondrial effects, 229-46
 - developmental, 239-41
 - functional requirements, 234-37
 - optimal function and nutrient supply, 238-45
 - muscle mitochondria and, 234-36
 - Norite eluate factor and, 9-10
 - overnutrition and weaning, 381-84
 - pathologic effects of
 - mitochondrial damage and, 243-45
 - peripheral hormone metabolism of thyroid gland and, 208-16
 - polyol absorption and effects on metabolism, 164-72
 - protein digestion process in infants, 116
 - renal disease and, 89-104
 - selenium and, 127-36
 - therapies
 - mitochondrial disorders, 235-37
 - thyroid gland and, 205-16
 - hormone actions and physiology, 201-22
 - thyroid hormones and metabolism and nutritional interactions, 216-18
 - trace elements in infant diets, 109-21
 - undernutrition effects of weaning, 384-91
 - vitamin A deficiency effects, 64-79
 - vitamin B₆ and, 3-5, 11-12, 279-80
 - vitamin B₁₂ and, 12-13, 51-52, 190-94, 274, 280-81
- O**
- Obesity
 - adipocyte precursors in culture, 423-25
 - body fat distribution physiology and, 417-36
 - caloric deprivation and, 435-36
 - site-related differences in adrenoreceptor number and response and, 428-29
 - weaning and, 381-82
 - see also Body fat distribution
 - Oleate uptake
 - free fatty acids and, 257-60
 - Optical probes
 - in measurement of intracellular calcium levels, 349
 - Osteoporosis
 - lactase deficiency and, 490
 - Overnutrition
 - weaning and, 381-84
 - Oxalate
 - xylitol effects on, 174-76
 - Oxidation
 - fat mobilization and, 464-65
 - of glucose
 - following injury, 460-61
 - injury and sepsis effects on, 447
- P**
- Palatinit, 161-77
 - absorption and metabolism of, 165-67
 - see also Polyols
 - Pantheine
 - discovery of, 5
 - Pantothenate
 - mechanisms of uptake, 190-93
 - microbiologic assays with lactobacteria and, 5-8
 - Pantothenic acid
 - discovery of, 4-5
 - Pathology
 - of mitochondria, 243-45
 - Pepsinogen
 - diagnosis of atrophic gastritis and, 273
 - Peptides
 - lactobacilli requirements for, 13
 - Phosphodiesterases
 - intracellular calcium and, 362-63
 - Pituitary
 - hypothalamic-pituitary axis, 201-22
 - nutrition and, 205-7
 - Plasma
 - copper and, 52
 - Pneumonia
 - vitamin A status and, 68
 - Polyols, 161-77
 - bladder disorders and, 176-77
 - comparative sweetness of, 163-64
 - current regulatory status of, 162-63
 - dental caries and, 167-70
 - disaccharide
 - absorption and metabolism, 165-67
 - metabolism and
 - xylitol and oxalate effects on, 174-76
 - mineral metabolism and, 170-72
 - monosaccharide
 - absorption and metabolism, 164-65
 - rat adrenal gland and, 172-73
 - tumors and, 176-77
 - Pregnancy
 - lactase adaptation in, 490
 - Primary lactase nonpersistence, 486-87
 - Pregesterone
 - adipocytes and, 425
 - Prolidase, 41
 - Prostaglandins
 - adipocytes and, 426, 428
 - Prostaglandin synthesis
 - inhibition of, 95
 - Protein(s)
 - actin-severing proteins, 369-70
 - acute-phase proteins, 456
 - annexins, 367-68
 - apolipoprotein genetics, 140-55
 - calmodulin and binding of, 358-62
 - catabolism and hypercatabolism of following injury, 449-54
 - cytoskeletal proteins and calmodulin activation, 363-66
 - digestion process in infants, 116
 - injury and sepsis effects, 446-48
 - lysosomal hydrolysis and, 40-47
 - muscle role in breakdown following injury, 454-56
 - in progression of renal disease, 97-102
 - renal function and, 92-96
 - selenocysteine incorporation into proteins, 133-36
 - synthesis of and mitochondrial function, 230-31
 - undernutrition effects of weaning, 384-91

- Pseudomonas aeruginosa*
selenium and, 128
Pseudopyridoxine, 11
Public health
assessment of iodine deficiency disorders, 32-33
communication among agencies, 33-34
coronary heart disease and, 304-35
international action for prevention and control of iodine deficiency disorders, 35
iodine deficiency disorders and, 32-35
political decisions and policy implementation, 34-35
vitamin A deficiencies and, 63-79
Pyridoxal
in lactic acid bacteria research, 10-12
pyridoxal-5-phosphate, 11, 279
Pyridoxamine
in lactic acid bacteria research, 10-12
pyridoxamine-5-phosphate, 11
Pyridoxine, 8-9
discovery of, 8
mechanisms of uptake of, 190-94
R
Radioimmunoassay
diagnosis of atrophic gastritis and, 273
Receptor-mediated endocytosis
cholesterol and, 47-49
genetic defects and, 52-56
iron and, 49-51
Recommended dietary allowances
weaning and, 379-82
Relative dose response test, 69
Renal disease
animal studies of, 97-99
calcium deposition and, 90-91
cellular immunity and, 91
human subject studies, 99-101
hypertrophy and, 91-92
hyperphosphatemia and, 90-91
lipids and, 90
progression of, 88-89
protein effects on assessment tests, 102-3
protein effects on course of, 97-102
protein restriction and, 103-4
systemic hypertension and, 89-90
xylitol and, 176-77
Renal function
animal studies of, 92-93
effects of protein intake on, 92-96
glomerular filtration rate and, 92-96
human subject studies, 93-94
kallikrein excretion and hypertension and, 331-32
weaning practices and, 383-84
Respiration rates
substrate effects on in hepatocytes of newborn rats, 240
Respiratory disease
host resistance mechanisms, vitamin A, and, 75-78
vitamin A deficiency effects, 66, 71
Restriction fragment length polymorphisms
in apolipoprotein gene variation studies, 145-55
Retinol, 66
Rheumatic fever
vitamin A status and, 68
Riboflavin
glutathione metabolism and, 293-95
mechanisms of uptake of, 190-94
microbiologic assays with lactobacteria and, 5-8
mitochondrial biogenesis and, 234
in nutritional disorders, 236
Ribonuclease
zinc levels and, 110
Rickets
weaning and, 386-87
tRNA
selenocysteine incorporation into proteins and, 133-36
mRNA
transferrin and, 49-50
S
Salla disease, 45, 396
Salmonella typhimurium
selenium and, 129
selenocysteine incorporation into proteins and, 134-35
Salt
hypertension and intake of, 329-33
in treatment of iodine deficiency disorders, 29-30
Scarlet fever
vitamin A status and, 68
Secondary lactase deficiency
definition of, 494-95
Selenium, 127-36
formate dehydrogenases and, 130-32
glutathione peroxidase levels and, 294-95
glycine reductase complex and, 130
selenium-dependent enzymes in microorganisms, 129-33
selenium-dependent formate dehydrogenases, 130-33
selenium-dependent hydrogenases, 132-33
selenocysteine incorporation into proteins, 133-36
substitution for sulfur, 127-29
Selenocysteine
incorporation into proteins, 133-36
Selenomethionine, 127-29
see also Selenium
Sepsis
fuel utilization and, 445-66
see also Energy expenditure
Septicemia
vitamin A status and, 68
Serum cholesterol
See Cholesterol
Serum triglycerides
coronary heart disease and, 317-18
Sialic acid
lysosomal hydrolysis and, 45
Skeletal muscle
mitochondria of, 233-34, 241
Small intestine
atrophic gastritis and, 274-75
uptake of trace elements in infant diet, 115
uptake of vitamins in, 191-93
Smoking
See Cigarette smoking
Sodium
hypertension and intake of, 329-33
see also Salt
Sorbitol, 161-77
absorption and metabolism, 164-65
dental caries and, 168
see also Polyols
Sphingolipidoses, 397-99
Staphylococcus aureus, 8
Storage disorders
enzyme replacement therapy for, 407-8
murine lysosomal cholesterol storage disorder, 405-6
overlapping lysosomal, 404-5
Streptococcus faecalis, 9-12

- Streptococcus mutans*
polysaccharide synthesis and,
168
- xylitol and, 169
- Streptococcus thermophilus*, 493
- Stress
hypertension and, 329-30
"hypothalamic arousal syn-
drome" and, 421
- Subsarcolemmal mitochondria,
233
- Succinate dehydrogenase, 240
- Sucrose
See Polyols; Sugar(s)
- Sugar(s)
lysosomal hydrolysis and, 45-
46
lysosomal membrane trans-
port, 55
polyol substitutes for, 161-77
see also Polyols
- Sulfate
lysosomal actions and, 54-55
- Sulfur
selenium and sulfur substitu-
tion, 127-29
- Sulphydryl groups
glutathione and, 289-90
- Sweeteners
See Polyols
- Syphilis
gastritis and, 272
- Systemic hypertension
and renal disease, 89-90
- T
- Tetrahymena geleii*, 4
- Thalassiosira pseudonana*
selenium and, 129-30
- Thiamine
in lactobacilli research, 12-13
mechanisms of uptake of,
190-94
- Thymus gland
vitamin A effects on, 76
- Thyroglobulin
tyrosine transport and, 43-44
- Thyroid gland
energy balance and, 213-16
energy expenditure and, 219-
20
growth and development func-
tions of, 220-21
hormone actions of, 201-22
hyperthyroidism, 27-28
iodine deficiency disorders
and, 22-35
nutrition and, 205-16
peripheral hormone metabo-
lism and, 207-8
tyrosine transport and, 43-44
- see also Iodine deficiency dis-
orders
- Thyroid hormones
metabolism and nutritional in-
teractions of, 216-18
nutrition-induced changes in
metabolism of, 218-21
thyroid releasing hormone,
201-22
thyroid stimulating hormone,
201-22
tyrosine transport and, 43-44
thyroxine
actions of, 207-8
thyroxin-binding globulin,
208, 212
thyroxin-binding prealbumin,
208, 212
tyrosine transport and, 43-
44
triiodothyronine, 210
tyrosine transport and, 43-44
- Tissue transplantation, 408-11
- Trace elements
absorption mechanisms in in-
fants, 117
bioavailability studies of in
infant foods, 114-19
in human milk, 111-13
in infant nutrition, 109-21
- Transferrin, 49-51
- Transplantation
lysosomal diseases in animals
and, 408-11
- Transport
of water-soluble vitamins, 187-
95
- Triglycerides
hydrolysis of, 140-41
- Triiodothyronine, 210
see also Thyroid hormones
- Trypsin
in infants, 116
- Tumors
lactitol and, 177
xylitol and, 176-77
- Twin studies
of coronary heart disease,
307-8
of familial hypercholesterole-
mia, 323-24
methodologies of human pop-
ulation genetics and,
305
serum cholesterol levels and,
316-17
- Type A gastritis
See Gastritis
- Type B gastritis
See Gastritis
- Tyrosine
albinism and, 54
transport process, 43-44
- V
- Very-low-density lipoproteins
transport of, 141
- Villin, 369-70
- Vitamin(s)
deficiencies
eye disease and, 64-66
hospital-based studies of,
74-75
in infants, 120
public health implications
of, 63-79
rickets and, 386-87
discovery of B group, 4-6,
11-12
epithelial transport of water-
soluble, 187-95
folic acid, 9-10
lactobacilli research and, 1-12
lysosomal membrane transport
of, 55
metabolism of, 193
mitochondrial biogenesis and,
235
Norite eluate factor and, 9-10
receptor-mediated endocytosis
and, 47-56
trace element nutrition in in-
fants and, 109-21
vitamin A
deficiency, 387
effects of deficiency, 64-67
effects of infection on vita-
min A status, 67-71
effects of vitamin A on in-
fection, 64-67
effects on mortality, 70-75
gastric atrophy effects on
absorption of, 281
host resistance mechanisms
and, 75-79
supplementation, 66-67, 71-
73
vitamin B₆
discovery of, 11-12
hypochlorhydria effects on
nutrition of, 279
lactobacilli research on,
3-5, 11
vitamin B₁₂
in atrophic gastritis, 274
hypochlorhydria effects on
nutrition of, 280-81
lactobacilli research on,
12-13
lysosomal membrane trans-
port of, 51-52
mechanisms of uptake of,
190-94
vitamin D
polyol levels and, 171, 173
rickets and, 386-87

514 SUBJECT INDEX

vitamin E
 gastric atrophy effects, 281
 water-soluble
 cellular disposition of, 193-94
 conceptual issues in transport of, 189-90
 historical perspective in transport of, 188-89
 transport processes, 187-95
 uptake mechanism of, 190-94
 Voltage-sensitive calcium channels, 351-52

W

Water-soluble vitamins
 See Vitamin(s)
 Weaning, 113-14, 377-91
 food analysis, 379-83
 guidelines for, 381-82

obesity in childhood and, 382-83
 overnutrition and, 381-84
 renal function and, 383-84
 rickets, vitamin D, and, 386-87
 timing of, 378-82
 undernutrition and, 384-91
 vitamin A deficiency and, 387
 Wilson's disease, 53

X

Xerophthalmia
 epidemiology of, 68-69
 infection and, 70-71
 vitamin A deficiency effects on, 64-66, 71
 Xylitol, 161-77
 absorption and metabolism of, 164-65
 bladder disorders and, 176-77

dental caries and, 168-70
 effects of on gastric emptying, 173
 oxalate and, 174-76
 see also Polyols

Y

Yeast
 growth factors for, 8-11
 selenized, 128

Z

Zinc
 deficiency of during weaning, 390-91
 deficiency in infants, 120-21
 dietary effects on bioavailability in infants, 117-19
 digestion process in infants, 116
 in human milk, 112
 infant nutrition and, 109-21

